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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,942 .	02/06/2004	Daniel F. Sievenpiper	B-4805NP 621580-7	7966

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EXAMINER

NGUYEN, HOANG V

ART UNIT PAPER NUMBER

2821

DATE MAILED: 04/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/773,942

Applicant(s)

SIEVENPIPER ET AL.

Examiner

Hoang V. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-20, 24, 24 is/are allowed.
- 6) ☒ Claim(s) 21 is/are rejected.
- 7) ☒ Claim(s) 22 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/6/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. There are no structural elements to define/describe the invention. Examiner assumes that the “plano-convex Rotman lens” as a Rotman lens with a substantially planar or flat side and a convex side.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Rao et al (US 5,936,588).

Rao (Figure 3) discloses a “plano-convex Rotman lens” 38 base on Examiner’s assumption that the “plano-convex Rotman lens” as a Rotman lens with one side to be substantially planar or flat side and another side being convex.

*Allowable Subject Matter*

4. Claims 22 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 1-20, 24 and 25 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 1, Rao discloses an antenna comprising a first plurality of cards and a second plurality of cards, each card having a conductive material layer disposed on at least one side of a dielectric layer, a plurality of parallel conductors emanating from a Rotman lens on a given card in the first plurality of cards matching with one of the parallel conductors emanating from each Rotman lens in the second plurality of cards. Rao, however, fails to specifically teach that the Rotman lens on the first plurality of cards are plano-convex Rotman lens and the Rotman lens on the first plurality of cards are convex-convex Rotman lens.

Claim 2 is allowed for depending on claim 1.

Regarding claim 3, none of the prior art record, either taken alone or in combination, fairly teaches or suggests a plurality of plano-convex Rotman lenses disposed in a stack, each plano-convex lens in the stack having a major surface disposed at an angle to the planar configuration of the slots of the antenna, with planar portions of the each Rotman lens defining a portion of each one of the slots of the antenna.

Claims 4-9 are allowed for depending on claim 3.

Regarding claim 10, Rao discloses an antenna comprising a long slot array; and a quasi-optical beam forming network constructed as printed circuit boards arranged in at least two

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stacks of printed circuit boards, each stack having a Rotman lens formed in a conductive layer associated with each printed circuit board, the Rotman lenses including conductors arranged such that the conductors of each Rotman lens in one stack each directly connect to a conductor associated with a different Rotman lens in another stack. Rao, however, fails to specifically teach that the Rotman lens of one stack defining edges of slots of the long slot array.

Claims 11-14 are allowed for depending on claim 10.

Regarding claim 15, none of the prior art record, either taken alone or in combination, fairly teaches or suggests a method of making an antenna comprising the steps of etching Rotman lenses with a plano-convex configuration with a planar edge of each etched Rotman lens being disposed adjacent and parallel to an edge of each of the printed circuit boards; and stacking the Rotman lens etched printed circuit boards in a stack with the planar edges of the etched Rotman lenses being adjacent a common edge of the resulting stack of Rotman lens etched printed circuit boards so that the planar edges of the etched Rotman lenses define a plurality of antenna slots.

Claims 16-20 are allowed for depending on claim 15.

Regarding claim 22, Rao fails to further teach, among other features, that the Rotman lens has a substrate with an effective dielectric constant which varies in a region immediately adjacent the planar end of the planar-convex Rotman lens due to apertures in the substrate in the region.

Regarding claim 23, Rao fails to further teach, among other features, that the Rotman lens has a substrate with an effective dielectric constant which varies in a region immediately

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adjacent the planar end of the planar-convex Rotman lens due to apertures in the metal layer associated with the region.

Regarding claim 24, Archer et al (US 3,761,936) discloses a double convex Rotman lens wherein the Rotman lens has a substrate with an effective dielectric constant. Archer, however, fails to specifically teach that the effective dielectric constant of the substrate varying in a region immediately adjacent at least one end of the Rotman lens.

Claim 25 is allowed for depending on claim 24.

### *Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Patents 4,490,723 and 4,641,144 disclose an antenna comprising a double convex Rotman lens disposed on a dielectric substrate.
- Patent 5,329,248 discloses an antenna comprising a Rotman lens.
- Patent 6,160,519 discloses an antenna steered system comprising stacked Rotman lens.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoang V. Nguyen whose telephone number is (571) 272-1825.

The examiner can normally be reached on Mondays-Fridays from 9:00 a.m. to 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoang Nguyen can be reached on (571) 272-1825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hvn  
4/11/05



**HOANG V. NGUYEN**  
**PRIMARY EXAMINER**